

Table 26. Radius Differences with Descriptive Parameters

Range of Radius Differences Between Curve Finder and Curvature Extension	# Matched	% of Matched	Average Error Quotient	Average Distance Between GIS Points (feet)
0% to <10%	58	41	0.75	114
10% to <20%	30	21	0.76	141
20% to <30%	16	11	0.95	116
30% to <80%	23	16	1.50	119
≥80%	14	10	0.38	185
Total	141	100		

Table 27. Length Differences with Descriptive Parameters

Range of Length Differences Between Curve Finder and Curvature Extension	# Matched	% of Matched	Average Error Quotient	Average Distance Between GIS Points (feet)
0% to <15%	44	31	0.76	108
15% to <30%	38	27	0.75	168
30% to <45%	31	22	1.03	115
45% to <80%	18	13	0.92	169
≥80%	10	7	0.82	72
Total	141	100		

8.4.4 Safety Analysis

The safety analysis focused on two types of collisions: those that were identified as curve-related collisions by the collision report and those that were identified as being located on a curve from the GIS route analysis. A collision could be curve-related without actually occurring within the bounds of the curves, but should be within a reasonable distance of the curve.

Each collision is assigned a milepost along the route by the police, which was converted to a relative distance from the nearest curve by the study team. Collision report mileposting is reported in NC to the nearest 0.1-mile increment; therefore, tolerances for these data were crashes within 0.1, 0.2, and 0.5 miles of GIS located curves. Table 5 shows that NC42 had 318 reported collisions listed as occurring on a curve and 3,416 total reported collisions over the five-year period 2005 through 2009. NC96 experienced 258 reported curve collisions and 1,251 total reported collisions during the time period. Table 5 also shows the difficulties that can arise from defining curves based on collision history. Along NC42, of the reported collisions that occurred on the curves identified through the GIS procedures, 120 collisions were labeled as curve-related by the police and 513 (633 minus 120) collisions were on straight sections according to the police report. Similarly, along N96, of the reported collisions that occurred on the curves